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CLINICAL REPORT

ON

CHRONIC PLEURISY,

BASED ON AN

ANALYSIS OF FORTY-SEVEN CASES.

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The study of Chronic Pleurisy by means of the analytical investigation of recorded observations, offers a field of scientific research which, as yet, has been cultivated but to a very limited extent. In proof of the correctness of this remark, it is sufficient to refer to the cursory and loose manner in which the subject is treated by the compilers of the most approved systematic works on practical medicine, and even in treatises devoted specially to diseases of the chest. Without professing to have taken pains to institute an extensive bibliographical examination with respect to this point, I am unable to cite any work which presents numerical results deduced from a larger collection of data, than that by Dr. Blakiston.\* This author gives the facts elicited by an analysis of seventy-eight cases. His enumerations are confined to a few only of the points pertaining to the natural history of the disease, a very small portion of the work being devoted to the subject. The late Dr.

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\* Practical Observations on certain Diseases of the Chest, and on the Principles of Auscultation. By Peyton Blakiston, M. D., F. R. S. Republished by Lea & Blanchard, Philadelphia, in 1848.

James Hope, during his last illness, was engaged in arranging the materials for a memoir on this subject, which should embody the fruits of his large experience, and the posthumous publication of the brief notes relating thereto, dictated on the bed of death, tends to enhance regret that he did not live to execute his design, and add another treatise to the works which will render his name ever illustrious in the annals of medical science.

It is needless to say with respect to this, as well as other diseases, that accumulated clinical observations constitute the true basis of its symptomatology, diagnosis, and our knowledge of the laws regulating its development, progress, and results. This is not less clear than the fact that our present knowledge of it in these relations is imperfect. There are several pathological questions of practical interest which remain to be settled by numerical investigations, such as the connection of the chronic with the acute form; its dependence on tuberculosis or other antecedent affections; the consecutive production of Phthisis or other diseases; the ratio of its fatality, and the influence of remedial agencies, separately and combined. On all these points the notions to be derived from current medical literature are wanting in precision, sometimes discrepant, and, as a matter of course, to a greater or less extent, erroneous.

There is another aspect in which the importance of the study of Chronic Pleurisy is strikingly apparent. The disease, although infrequent in its occurrence, is not so rare but that it occasionally falls under the notice of most practitioners of medicine, however restricted the circuit of their observations. But in a very large proportion of instances it is not recognized. As will be seen in the sequel, a great majority of the cases that I have collected, had been under the treatment of one or more physicians who had failed to discover the seat and character of the affection. It is not probable that these cases are notably peculiar in the fact of their escaping diagnosis, for it is remarked by Dr. Hope that "there is no class of affections more habitually overlooked by the bulk of the profession than this." It necessarily follows from this fact, that the disease very frequently fails to receive appropriate management, and, perhaps, nearly as often is treated by measures which are more or less injurious.

The considerations just adduced have led me to examine the facts relating to Chronic Pleurisy contained in the histories of the cases coming under my observation during several years that I have been accustomed to keep notes of public and private practice. The number of cases is not very large, and, on the other hand, not so small as to be insignificant. A more serious defect is the incompleteness of the histories. A considerable proportion of the

patients were either seen in consultation, or applied simply for a physical exploration of the chest. Under these circumstances a general sketch of the previous history only was noted, and in several instances the farther progress and issue were not procured. The cases, moreover, came under my notice at different stages of the history, and the notes of some were made after recovery from the disease. The data which I have collected are, thus, manifestly inadequate for the positive and negative results of a complete numerical analysis. To this character the present Report can have no claim. My only expectation is to furnish a small contribution toward the cultivation of a field of clinical study, of great practical interest, which, from the difficulty of aggregating facts, or other causes, has hitherto been neglected.

The number of cases of which I have preserved notes, is *forty-seven*. These cases have occurred, some in hospital and others in private practice, for the most part during the last eighteen years. A few are of an older date. For convenience of consideration and reference, they admit of being distributed into several groups. One of these groups will embrace the cases which came under observation while the disease was progressing either favorably or unfavorably. Another group will include cases in which the diagnosis and history were retrospective, that is to say the facts were obtained at a period more or less distant from the occurrence of the disease, being restricted in a great measure to its consequences or sequelæ. Another will embrace cases of circumscribed, as distinguished from general pleurisy. Another will embrace cases of pleurisy from perforation, constituting the affection known by the incorrect title of pneumo-hydro-thorax. I shall speak of these several groups, excepting the first, under distinct heads, but with reference to some points of inquiry it will be proper to examine the cases collectively, disregarding the foregoing divisions. Before considering these several groups, therefore, distinctly, I shall take up the points just alluded to, devoting separate consideration to the symptomatology, the physical signs and diagnosis, and I shall, in conclusion, offer a few remarks on the management of the disease.

*Age.* Excluding the cases in which the disease occurred subsequently to perforation of the lung, and a single case in which the pleurisy was circumscribed and probably due to external injury, the maximum of age is *forty-five*. One patient, only, was as old as this. One patient was forty-one; one was thirty-eight, and two patients were thirty-five. In all the remaining cases the age was below thirty. The youngest patient was five years of age. Two were of this age. The next youngest was six years; and the next twelve. The average age in thirty-six cases in which the age was ascertained

as near as practicable, is twenty-two and a quarter years. The disease, according to these results, is not without the influence of age. It is a disease incident to early life, occurring, in a very large proportion of cases, before thirty, and very rarely after forty years of age.

*Sex.* *Thirty-four* of the cases were males, and *eleven* were females. In the two remaining cases the sex is not noted, the patients being children.

*Season.* Of eighteen cases in which the date of the commencement of the disease is noted, excluding the cases in which the disease was due to perforation, *two* occurred in June; *three* in February; *one* in April; *one* in May; *five* in June; *one* in July; *three* in October, and *two* in December.

*Previous health.* Of twenty-five cases in which the health of the patients prior to the occurrence of the disease was ascertained, it was good in *fifteen*. The cases due to perforation are excluded from this enumeration. In the remaining ten cases in which the previous health was poor, the following are the facts in the cases respectively: One patient had rubeola three months before, with a continuance of cough and debility up to the time of coming under treatment for pleurisy. Another had a severe attack of scarlatina anginosa, a month before coming under observation with pleurisy. In two cases, females, the health had been delicate for some time, with no special malady except leucorrhea; one of these patients had had lichen a year before. Another, a lad, aged fifteen, had been subject, from infancy, to two or three attacks yearly of difficult breathing, considered to be asthma. Another had suffered for several months from a chronic indolent ulcer on the leg. Another had parotitis shortly previous. In *three* cases the history rendered it probable that tuberculosis existed prior to the pleurisy; and in *one* of these cases the pleurisy was preceded by articular inflammation of the ankle joint, of brief duration.

The foregoing results, coupled with the fact that in 3-5 of the cases the previous health of the patients was supposed to be good, go to show that the disease becomes developed without reference to any particular class of affections as antecedents. The small number of cases in which the evidences of tuberculosis were contained in the histories is worthy of notice. It is, indeed, not improbable that tuberculosis may have existed, in some instances, prior to the pleurisy, and the history furnish no distinct evidence of the fact. In no case was the patient subjected to physical exploration to determine the non-existence of phthisis before coming under observation for pleurisy. And, on the other hand, there is the absence of the demonstrative proof of tubercle afforded by the physical signs in the few cases in which it is supposed to have existed. The pre-existence of phthisis is only rendered probable by the



rational symptoms entering into the early histories. It seems fairly deducible that, judged by these observations, a very large proportion of cases of Chronic Pleurisy do not involve, as an antecedent affection, tuberculosis. The occurrence of tubercle subsequent to the pleurisy, is an interesting point of inquiry, but this will be deferred for the present.

*Character of the disease at the commencement.* In six cases the facts noted with respect to the previous history are insufficient to determine whether the disease was acute, or subacute at the commencement. Excluding these, together with the cases in which the disease was consecutive to perforation, and those in which it was circumscribed, the remaining number of cases is *thirty-five*. Of these thirty-five cases the pleurisy was subacute from the first in *twenty-nine*; it was acute before it became chronic in *two*; and it was subacute at first, after a few days assuming an acute form, and then becoming chronic in *four*. According to these results subacuteness in the inflammatory action from the date of the attack is decidedly the rule with respect to Chronic Pleurisy. This does not agree with the statements generally made in works on practical medicine, and on diseases of the chest, relative to this point. The chronic form of the disease is said usually to follow the acute. To avoid misconception, inasmuch as the terms acute and subacute allow some degree of latitude in their application, it should be added that in all the cases which are considered to have been subacute from the commencement, severe pain occasioning embarrassment in respiration, and high febrile movement were absent. The pain, in fact, was usually slight in degree, and sometimes scarcely present at all, the patients frequently not taking to the bed, or applying for medical aid, till the affection might be considered to have become chronic.

*Seat.* Excluding four cases in which the disease followed perforation, and one case in which it was circumscribed and probably due to mechanical injury, the remaining number is *forty-two*. Of these forty-two cases the disease was seated in the *right* side in *nineteen*, and in the left side in *twenty-three*. The disparity as respects the side affected is not nearly so great in this collection of cases, as in those analyzed by Dr. Blakiston. The latter gave, of seventy-eight cases, the right side affected in *twenty*, and the left in *fifty-eight*.

*Complications.* In three cases the histories render it probable that tuberculosis coexisted. The disease occurred in connection with typhoid fever in one case, and with what was regarded as infantile continued fever in another case. Chronic laryngitis coexisted in two cases, in one of the cases tubercle probably also existing, but not in the other case, as proved by the autopsy.

A chronic ulcer of the leg in one case. Ascites, pericarditis, and a slight degree of chronic inflammation in the other side of the chest, in one case. Pericarditis was supposed from the physical signs to be present, in one case, and was demonstrated after death in another case. These are all the complications that can be ascertained from the histories. The cases in which perforation preceded the pleurisy are excluded.

*Causes.* In four cases the disease was occasioned by perforation of the lung. In two of these cases the perforation occurred in consequence of circumscribed gangrene, and in two instances in connection with tuberculosis. In one case in which the pleurisy was circumscribed, it was probably caused by external injury. This case will be given at length under another head. Of the remaining cases, in the great majority, not even probable causes are mentioned in the histories. It is stated in the history of two cases that the patient was attacked after unusual exertion and exposure. In another instance the patient was attacked suddenly, after exposure to cold. Another patient was seized after getting the feet wet and apparently taking cold. These are all the causes assigned, but it is proper to state that I am by no means certain that pains were generally taken to obtain information from the patients or friends relative to this point. The probable origin of the disease in one of the cases claims particular notice. The patient, a girl, twelve years of age, was attacked suddenly, without any assignable cause, with pain in the back, extending laterally over the right side, but not to the anterior surface of the chest. No medical attendance was obtained until a week afterward, when she was seen by Dr. Josiah Trowbridge, of this city. At that time Dr. T. discovered a swelling situated on the latero-posterior portion of the chest. He regarded it as phlegmonous inflammation, deeply seated, but exterior to the walls of the chest. At the expiration of another week, Dr. Trowbridge saw the patient again, and he then thought there was fluctuation, but did not deem it advisable to make an opening. The swelling was very tender to the touch. A few days after the second visit by Dr. Trowbridge, Dr. Sprague, of this city, was called in. He regarded it in the same light as did Dr. T., and directed poultices, which had already been applied, to be continued. I saw the patient three weeks after the date of the attack. There were, then, the evidences of Chronic Pleurisy, with considerable enlargement of the chest on the right side. In my note of the first examination, nothing is stated relative to the presence of a tumor, and as the case came under observation many years ago, I am unable to say, from recollection, whether it existed or not. If it were present, or in any degree prominent, it is singular that in the record made at the time, no reference should have been

made to it. A few days afterward, however, a tumor was observed occupying (as stated by Dr. Trowbridge, who visited the patient again with me) the site of the tumor present at his previous visits. The tumor was large and fluctuating, and after the lapse of a few days more, was opened by Prof. Hamilton, of this city, giving exit to a copious discharge of inodorous pus, which continued to discharge for several months. The abscess beneath the integument communicated freely with the pleural cavity. This case will be referred to again under another division of the subject.

From the history just given, it is suspected that in this case an abscess may have first formed exterior to the chest, which ulcerated in an inward direction, its contents being discharged between the pleural surfaces, giving rise to pleuritis and empyema.

*Quantity of effusion.* Excluding the cases which came under observation after the fluid effused within the pleural cavity had been nearly or quite removed by absorption, together with the cases in which the pleuritis was circumscribed, and the remaining number is *thirty-eight*. Of these thirty-eight cases, the quantity of fluid contained within the chest was relatively *moderate* in *four*. By the term moderate, I would be understood to mean that the chest was less than half filled with the fluid, as determined by physical exploration. The quantity was *considerable* in *eight*. That is to say, the chest was about half filled or somewhat more. The quantity was *large* in *sixteen*. In these cases the chest was full, or nearly so. The quantity *very large* in *ten*. In the latter class of cases the chest was not only filled, but its dimensions enlarged, the heart, in some instances in which the left side was the seat of disease, being pushed beneath, or beyond the right margin of the sternum, and in one instance in which the right side was affected, the liver being depressed below the false ribs.

So far as these observations go, they show that the effusion in general Chronic Pleurisy is never small in amount, but, as a general rule, it is rather large, or very large — a fact which gives to the diagnosis by means of physical signs in all instances simplicity and certainty.

#### SYMPTOMATOLOGY.

The record of the symptoms occurring during the career of the disease, in many of the histories, as already stated, is incomplete. In a large proportion, even of the cases which came under observation while the disease was progressing, the disease had already existed for a greater or less length of time. Moreover, the patients did not generally

remain constantly under my observation from the date of the first record. In several instances notes at a single examination only were obtained, and sometimes information of the farther progress, and the issue, is wanting, the cases being lost sight of. The number of complete histories is too few to furnish data for determining with precision the numerical ratio in which different symptoms are present or absent in this disease. Nevertheless, an analysis of the facts pertaining to symptomatology which the histories do contain, may be of some practical interest and value.

*Pain.* Most of the histories contain information respecting the amount of pain experienced at the commencement of the disease, and prior to the time that the cases came under my observation. If we exclude the cases in which acute inflammation preceded the chronic form of the disease, and those in which the disease supervened in consequence of perforation, it does not appear that in a single instance pain was severe. In the great majority of cases it was not sufficient in amount to render it prominent as a symptom; in several instances it was altogether wanting. When present it was generally confined to the access, or continued for a short time only after the attack; usually disappearing in the course of a few days. Its character was lancinating, described by patients as stitch-like, and in each instance in which its situation is specified, it was referred to the inferior part of the chest. With respect to the situation, it thus differs from the usual seat of the pains which accompany the ordinary subacute attacks of pleurisy occurring in the progress of tuberculosis. The latter are referred by patients to the upper part of the chest, very frequently beneath the scapula. Severity of pain, approximating to that degree which generally attends the early stage of acute pleurisy, evidently is rarely a symptom of the chronic variety, when the disease is subacute from the beginning; and its presence in ever so slight a degree, is by no means uniform. Without careful inquiry it would often escape the notice of the practitioner in obtaining the previous history of patients affected with Chronic Pleurisy, having been so slight as scarcely to attract attention at the time, or its occurrence been forgotten, and it is therefore mentioned by patients not of their own accord, but only after they have been requested to endeavor to recollect with regard to the point. This is stated in several of the histories in the present collection. Whenever cases come under observation after the disease has existed for several weeks, or months, the absence of pain is the rule. Occasionally a dull pain, or sense of uneasiness in the affected side is complained of; but, so far as my observations go, even these instances are exceptional. The practical bearing of these facts is too obvious to require remark.

*Cough and expectoration.* An examination of the facts noted with respect to these symptoms, leads to the following general conclusions: They are sometimes entirely absent, and are not, therefore, essential to the diagnosis. When present, they are generally not prominent symptoms. This, in fact, so far as these observations go, expresses the rule, the exceptions being very few. Cough and expectoration did not precede the development of the pleurisy except in the few cases in which it was inferred from the history that the patient, prior to the latter disease, was laboring under tuberculosis. The pre-existence of these symptoms, for a considerable length of time, should render the supposition of antecedent tuberculosis highly probable. Pleurisy occurring in patients not tuberculous, is oftener accompanied by cough without, than with an expectoration, or the latter is insignificant in amount. The cough is usually dry, and short or hacking. The expectoration, when present, usually consists of mucus, more or less modified. These facts show that Chronic Pleurisy is often uncomplicated with bronchitis, and if the latter affection coexists, it is of a mild grade.

A copious purulent expectoration sometimes occurs suddenly during the progress of pleurisy, and continues for a greater or less period. Under these circumstances ulceration of the pleura commencing on the free surface of the membrane, and perforation of the lung, opening a communication between the pleural sac and the bronchial tubes may be suspected. This happened in two cases in the present collection, in both instances the pleurisy being circumscribed; and it was supposed to occur in another case after the patient had passed from my observation. The two cases just referred to I shall give in full under another head.

In the cases in which tuberculosis appeared to be developed during the progress of, or subsequent to the pleurisy, cough and expectoration became more or less prominent. Prominence of these symptoms, when before they had been either absent or slight, provided they are not due to perforation, should give rise to strong suspicion of tubercle. This practical consideration is the more important, inasmuch as the physical signs of tubercle are rendered less available by the existence of pleurisy with effusion, and also by the permanent effects of the latter upon the chest.

*Respiration.* Excluding the cases of perforation, the frequency of the respirations was almost uniformly somewhat increased. To this rule, however, there are exceptions. In one of the cases, while the quantity of effusion was very large, removing the heart to the right side of the sternum, the respirations were but sixteen per minute. The increased frequency was not usually great, varying from twenty-five to thirty-five per minute. In one case



the respirations were forty per minute. I should remark that the enumeration per minute is noted in but a small proportion of the cases, descriptive expressions being used in the remainder.

The respirations were uniformly increased in frequency by exercise. This was more prominent, as a symptom, than the amount of acceleration while the patients were tranquil. In several instances the chief source of complaint by the patients was, that they were short-winded on walking, or any kind of physical exertion. They would sometimes declare that they were quite well, and able to labor except for this difficulty. The want of breath was also apparent in conversation. The patients were obliged to stop frequently in the midst of sentences to inspire.

Dyspnœa, or a painful sense of breathlessness, does not appear to have been present in any of the cases, while the patients were at rest. In cases in which the chest was filled with liquid effusion, the respirations rendered short and frequent by slight exercise, and imperfect oxygenation of the blood denoted by lividity of the prolabia, and other parts, there was not a marked degree of suffering from dyspnœa. In one of the cases only, is it noted that this symptom was in any measure prominent. This was a case of empyema in which the purulent contents of the chest having made their way through the thoracic walls were evacuated externally. In this case, for a time, the dyspnœa was considerable, causing the patient to preserve the semi-erect position. It was, however, relieved before the discharge of the contents of the chest took place. It is possible that dyspnœa may have occurred in other of the cases while they were not under my observation; but it may be safely stated that they show the absence, or non-prominence of this symptom to be the rule in Chronic Pleurisy.

*Circulation.* The pulse was found to be more or less accelerated, in the great majority of the cases, during the progress of the disease. The degree of acceleration differed considerably in different cases, ranging usually from 80 to 120, but in one case reaching 140 and in another 160 per minute. In a few instances, at the time the symptoms were noted, the pulse preserved its normal frequency, and in one instance was below the average standard, being sixty-four per minute. As respects other characters, in all the histories containing information on this point, the pulse was small, compressible, and sometimes quite feeble. It would be highly interesting to study the pulse, as well as other symptoms, in the different classes of the cases of Chronic Pleurisy separately: for examples, in the cases characterized by the coexistence of tubercle, and in which this complication was absent; in cases in which the liquid effusion became purulent, constituting empyema, etc. The

present data, however, are inadequate for the prosecution of these inquiries to an extent sufficient to render them of much value.

Lividity of the prolabia is noted in three cases, all of which proved fatal, and in two the disease was complicated with pericarditis.

In the history of one case in which marked capillary congestion of the surface of both extremities was observed, the left upper extremity presented this appearance to a greater extent than the right, and the temperature was sensibly less. In this case the left side was the side affected, and the amount of effusion was large.

*Skin.* Sweating is an event occurring pretty often in this disease. The sweating is frequently profuse, and is most apt to occur at night. The sweating is by no means uniformly preceded by a febrile paroxysm, or exacerbation. I think it probable that in but few, if any of the instances, was well marked hectic present, but on this point the histories are defective. To be precise with respect to sweating, it is noted, as a prominent symptom, in eleven of the cases. Of the remaining cases it is noted to have not been present in a few, but in most of the cases nothing is stated relative to it.

Aside from sweating, the skin is stated to have been cool, or cool and moist in several of the cases, but in a large proportion the condition of the surface is not noted.

*Chills.* In a small proportion of cases a chill, or chills, or chilly sensations are noted to have occurred. Here, as with respect to other symptoms, my data do not authorize the deduction of an exact numerical ratio. Chills may have been present in some cases after the periods in the progress of the disease to which my records extend, or they may have escaped attention in recording the previous history; in the latter instance they would not have constituted a very prominent symptom. In the cases in which chills are noted to have occurred, they do not appear to be uniformly associated with other events investing them with any special significance. They occurred in cases in which the progress and issue of the disease showed that the liquid effused within the chest did not become purulent; and also in cases in which there were no evidences of coexisting tuberculosis. In one case the recurrence of chills for several successive days preceded a sudden moderate purulent expectoration which continued but for a short time. This patient recovered, and has, for several years, been in good health. In two cases, the chills were so prominent in the early part of the disease that the patient was supposed to be laboring under intermittent fever.

*Digestive System.* Anorexia, or impaired appetite, enter into the history of many of the cases, but it is remarkable how small was the disturbance of

the digestive system in several instances. The appetite was tolerable, and sometimes excellent, and the digestion good, during the whole progress of the disease. In several of the histories it is noted that the tongue was perfectly clean. A few cases were characterized by the occurrence of diarrhoea, not colliquative, but apparently exerting a salutary effect, being followed by diminution in the amount of the liquid effusion within the chest.

*Aspect and nutrition.* The countenance presented, in some cases, marked pallor, but in other cases the aspect was not notably morbid, and, in some instances, while the quantity of liquid effusion within the chest was considerable, the general appearance denoted good health.

Progressive emaciation characterized the cases ending fatally, but of those in which recovery took place, the loss of weight was not always great, and in several instances considerable embonpoint was preserved.

*Strength.* The muscular strength was retained in a remarkable degree by some of the cases terminating fatally, the patients being able to sit up until within a short time before death. In one case, particularly, this preservation of strength was exhibited in a striking degree. The patient was considerably emaciated, there were anorexia, short and labored respiration, incessant hacking cough, coldness of extremities and oedema, lividity at the roots of the nails, frequent and intermitting pulse — these symptoms preceding dissolution — but he was still able to sit up, and insisted on being dressed. In several cases in which the quantity of liquid effusion was large, filling the chest, the patients were not confined to the bed at any time during the progress of the disease; but under these circumstances, in some instances, they were able to be out of doors, taking exercise and even performing a considerable amount of labor. For example, in the case of a patient who applied to me six weeks after the date of attack, having had no medical advice up to that time, the right chest was completely filled with fluid. He had, however, not kept the bed even for a single day, but had continued steadily in his occupation, embracing wood-sawing, taking care of a horse, and the varied duties of a house servant. He rapidly recovered after ceasing labor, being at no time prevented from going out of doors, and walking always a mile to my residence for medical advice.

As another illustration, a lad, aged ten years, had labored under the disease for two months before the diagnosis was made. During that time he had never been kept at home, but had daily been accustomed to play out of doors. He was allowed to continue his out-door sports, and he progressively improved and recovered, complaining only of being put out of breath on



active exercise. At the time of the examination, two months after the date of the attack, the left chest was completely filled with liquid effusion.

*Urine.* In a few cases in which the condition of the urine was ascertained, it was uniformly scanty and high colored. The information does not extend beyond the qualities just mentioned.

Retention of urine, requiring the catheter for several days, was a symptom in one case.

*Edema.* Oedema of the lower extremities is noted in the histories of three cases, and in one of these cases the face was also oedematous. Two of the cases terminated fatally.

*Hæmoptysis.* This symptom was present in two cases. In one of the cases, it preceded, together with slight cough, the development of the pleurisy. The history renders it altogether probable that tubercle coexisted in this case. In the other case the hæmoptysis occurred twice in the early part of the disease. The patient, however, progressed favorably, and three years afterward, was in good health, being free from any pulmonary symptoms, except want of breath for active exercise. A few months afterward he had a third attack of hæmorrhage, which was quite copious. This was not followed by any new pulmonary symptoms, and at the present time, about four months after the last attack of hæmoptysis, he is actively engaged in business, is free from cough, and considers himself quite well. It is, however, by no means certain that the lungs are free from tubercle in the latter case.

#### PHYSICAL SIGNS.

The physical signs, in most of the cases, were determined only so far as was required to establish the diagnosis. They were not recorded, more than the symptoms, with a view to numerical analyses. I shall consequently give, in this division of the subject, as in that devoted to the symptomatology, the practical results of an examination of the facts contained in the histories, without aiming to ascertain the relations which the signs individually bear to each other, and the disease, as respects the ratio of their occurrence. In the following account I will exclude reference to the cases of perforation, of circumscribed pleurisy, and those in which the disease had existed at a period more or less removed from the time the cases came under my observation. These three groups of cases will presently be considered under distinct heads, and attention will therefore now be directed only to the cases of ordinary chronic, general pleurisy, during the progress of the disease.

*Percussion.* The signs developed by percussion, were quite uniform, viz., flatness extending from the bottom of the chest upward, either entirely, or to a greater or less extent over the side affected; resonance clear, apparently exaggerated, over the healthy side, and in cases in which the flatness was not universal over the affected side, relative dullness of resonance above the upper boundary of the flatness, compared with the corresponding portions of the healthy side.

The few deviations from, or additions to the above rule of the percussion signs, which are noted, are as follows:

In one case the resonance was tympanitic over the lower third of the left side, which was the side affected, a tympanitic resonance also being present over the epigastrium. This was undoubtedly due to flatulent distension of the stomach.

The flatness in two cases was observed to extend from the side affected, beyond the sternum, over a small portion of the healthy side. In both cases the quantity of liquid effusion was very large, distending the chest in every direction, and pushing laterally the mediastinum so as to encroach on the opposite half of the chest.

In two cases the resonance on the affected side above the line of flatness, was exaggerated, the clearness being relatively greater, in a marked degree, than on the healthy side. In one of these cases it is noted that the clearness of resonance was apparent over the upper third anteriorly and posteriorly. The chest on that side was enlarged, intercostal depressions lost, motions in respiration limited, and there was absence of all respiratory sound over the inferior and middle thirds. The respiration over the upper third was feeble, the vesicular quality absent, and the expiration prolonged. The greater relative clearness of resonance, at the summit of the chest on the left side, continued, and after the lapse of a month, the marked contraction of the affected side having taken place, the same disparity between the two sides was noted.

In the other case the infra-clavicular region of the affected side was bulging, and in this region the resonance was clearer than in the corresponding region on the healthy side. The respiration was relatively feeble; its qualities not being described. Flatness on the affected side existed below the second rib. The side (which was the left) was visibly enlarged, measuring one-fourth of an inch more than the right. In one case there was flatness over the left side *except posteriorly at the inferior portion of the chest below the angle of the scapula*, tubular respiration was heard over the situation just mentioned. The left side was comparatively immovable. The heart

was carried upward and to the right, the point of impulse being perceptible between the nipple and left margin of the sternum.

Tenderness apparent on percussion, is noted in several of the histories.

It does not appear that a change in the level of the liquid contents of the chest, in different positions of the patient, was observed in any instance, but I am not certain that pains were taken, generally, to examine for this sign, which is frequently found in cases of acute pleurisy and of hydro-thorax. The great amount of effusion in a large proportion of cases of Chronic Pleurisy renders it often unavailable.

*Auscultation.* It will suffice with respect to this, as well as the other classes of physical signs, to notice any peculiarities differing from the ordinary rule in this disease. The rule of auscultatory signs in Chronic Pleurisy, is as follows: Absence of all respiratory sound on the affected side from the bottom of the chest upward, as far as the flatness on percussion extends; respiration above this line on the affected side more or less developed, and tubular and bronchial in character, with bronchophony in some cases; occasionally œgophony; on the healthy side the respiratory sound normal in character, and increased in intensity, constituting the respiration known as exaggerated, supplementary or puerile.

On examination of the facts contained in the histories, after writing the foregoing paragraph, I find but a single case in which any anomalous deviation from the usual signs is noted. In this case a faint and apparently distant bronchial respiration was heard generally over the chest on the affected side. There was flatness over this side except at the summit. The side was visibly enlarged, but no marked disparity in mobility. This was the case, already referred to, in which there was bulging of the infra-clavicular region on the affected side, and a greater amount of resonance in that situation, than in the same region on the healthy side.

A friction sound was heard in three cases. In one of these cases it existed early in the disease before much liquid effusion had taken place. In another it was noticed by the patient himself, after the disease had existed for some time, and he was able to be about, having been for some time confined within doors. In the remaining case it existed during the progress of the disease, while the quantity of effusion was considerable. These were all the cases in which this sign was discovered, but it was not always carefully sought for, at different stages of the disease, in the cases individually.

Ægophony was not often sought for. It was not distinctly noticed in any instance, but in one case there was an approach to it, the voice having a œgophanous modification.

Bronchophony was observed in several of the cases at the summit of the chest on the affected side.

Adventitious sounds of respiration, or râles, are not noted to have been present in but two cases. In one of these cases sibilant and sonorous râles were heard at the summit of the chest on both sides; and in the other case crackling in the same situation. In both cases the history of the case showed the coexistence of tubercle.

*Inspection.* Visible enlargement of the chest on the affected side was a well marked sign in several cases. Permanent expansion of the affected side, rendering it comparatively immovable in respiration, was usually observed in the cases in which the amount of liquid effusion was large. The intercostal spaces, except in some instances in which the quantity of adipose tissue prevented depressions from being apparent, were elevated to the level of the ribs, and in some cases projected beyond this level. The contrast between the two sides in this respect, was frequently striking.

After the liquid effusion was absorbed, or considerably lessened, contraction of the chest was apparent in all the cases which remained under observation. The diminished semi-circumference on the affected side was frequently obvious; but the change was more marked in the depression of the shoulder, and generally, but not invariably, in the diminution of the interseapular space.

Œdema of the affected side is noted to have existed in some cases, and in other cases its absence is stated, but a large proportion of the histories contain nothing relative to this point. The same is true of enlargement of the subcutaneous views on the affected side.

*Mensuration.* Measurement showed, in several cases, the affected side to be distended while the amount of liquid contents was large; and afterward contraction to less than the normal size. The greatest increase in any of the cases in which measurement was practiced, was two inches. The greatest degree of contraction noted is three-fourths of an inch, but mensuration was not resorted to, after absorption was completed, in some instances in which the contraction was probably greater than this.

*Palpation.* The absence on the affected side of a vocal fremitus, appreciable on the healthy side, is noted in several of the histories. In two cases a sense of fluctuation was perceived in the intercostal spaces.

*Displacement of the Heart.* In the cases in which the disease was seated in the left side, and the quantity of liquid effusion large, the heart was displaced, to a greater or less extent, from its normal situation. This was shown, in some instances, by the impulse not being felt at any point, the



organ being too far removed from the walls of the chest, to be brought into collision by the systolic contraction. Under these circumstances the cardiac sounds were heard over a considerable space, but usually rather feeble and distant. This rule is not without exceptions. In one instance the sounds of the heart were heard with considerable intensity over the chest, and a shock communicated to the walls of the affected side, so that the attending physician, who was but little acquainted with physical exploration, supposed the case to be one of disease of the heart.

The displacement, in other instances, was rendered more obvious by the impulse being appreciable at a greater or less distance from the point where it is felt in health. In five cases the impulse was felt or seen beyond the right margin of the sternum. The quantity of fluid, in these cases, was sufficient to push the heart and mediastinum laterally, causing them to occupy a portion of the space belonging to the right side of the chest. The heart was removed in an upward as well a lateral direction in these cases, the impulse being apparent in the right mammary region in one case, and between the third and fourth ribs in another case. In the instances in which the displacement was not so great, the impulse was perceived at different points in a line running directly in an upward and lateral direction to the right. As the liquid contents of the chest diminished by absorption, the heart receded along the same line in a direction toward its normal position.

In the cases in which the right side was the seat of the disease, displacement of the heart is noted in but one instance. Pains were, perhaps, not generally taken to ascertain whether the relations of the organ were disturbed, as I find nothing relative to this point in the histories, save in the single instance referred to. In that instance the patient came under observation four months after the date of attack. The right chest then presented marked contraction, and diminished mobility. There was flatness on the right side below the nipple, and absence of respiratory sound. The impulse of the heart was found on a level with the left nipple and between the sternum. This displacement was probably due to the absorption of the fluid effused into the right chest, a result of Chronic Pleurisy on that side which was first noticed by Dr. Stokes, of Dublin.

#### DIAGNOSIS.

It is evident that, so far as its symptomatology is concerned, exclusive of physical signs, Chronic Pleurisy is often remarkably latent in its character, as well as insidious in its development. Symptoms pointing to pulmonary

disease, rarely prominent, are frequently quite insignificant, or altogether absent; and when present even in a degree to direct attention to the chest as the seat of the malady, they afford no criteria to indicate the particular structure involved, and the nature of the affection. The rational or vital phenomena, in a large proportion of cases, are insufficient for a positive diagnosis; and, inasmuch as physical exploration is still neglected by a large class of practitioners, the disease, in proportion to its frequency of occurrence, is, perhaps, as often overlooked and confounded with other affections as any in the nosology. The cases that I have collected furnish proof of the correctness of this remark. In a pretty large number of these cases the histories show errors of diagnosis on the part of the physicians under whose notice they had fallen, and I am by no means assured that pains were taken in noting the history of each case to ascertain and record the facts with respect to this point. The propriety of embracing the facts pertaining to this subject in the present Clinical Report, would be more than doubtful, if they were not calculated to subserve an useful practical purpose. But inasmuch as they tend to enforce the importance of physical signs, it would be as improper to withhold them, as it would be to give them publicity simply as a matter of curiosity.

The number of cases in which errors of diagnosis are noted to have occurred, is eighteen. Of these eighteen cases, in four the disease had been treated as latent intermittent fever. This error was based, in two instances, on the fact that chills were pretty prominent, and in the other cases on the fact that the patients had been exposed to miasmata. In four cases the disease was supposed to be phthisis. In two cases the patients were thought to be laboring under continued fever, and in one case the disease was developed in the course of fever and overlooked. In the remaining seven cases, the supposed affection was in each case different. The following is a list of the diagnostic views that had been entertained: Disease of the heart, abscess between the pleura and walls of chest, bilious fever, hepatization of lung, liver complaint, general debility, and some pulmonary affection the nature of which was confessedly not known.

The diagnosis of Chronic Pleurisy, with the aid of physical exploration, is as simple and sure, as it is difficult and doubtful when the sole dependence is on the symptoms. Flatness on percussion extending from the bottom of the chest, upward, over the whole, or a considerable portion of one side, anteriorly, posteriorly, and laterally, and absence of respiratory sound, would alone lead to a correct diagnosis, with some very rare exceptions. A tumor filling the chest on one side, in part, or entirely, constitutes almost the only

morbid condition in which the above combination of signs is presented, exclusive of liquid effusion. Solidified lung rarely, if ever, occasions the same absolute loss of sonoriety, in the same situation, and to the same extent, coupled with absence of all respiratory sound; and, on the other hand, the presence of a bronchial respiration in cases of large liquid effusion is an anomaly of which but a few instances are on record. But, aside from the above combination, if the liquid effusion be large, as it generally is in Chronic Pleurisy, we have the enlargement of the chest on the affected side, its comparative immobility, the widening and elevation of the intercostal spaces, the displacement of the heart if the affection be seated in the left side, the contraction of the affected side after the liquid effusion has been removed wholly, or in part, by absorption, the change of level of the fluid if the quantity be moderate and the pleural surfaces free, a friction sound in some cases, the absence of the vocal fremitus frequently appreciable on the sound side, and occasionally the ægophonous modification of bronchophony. With the assistance of more or less of these collateral signs, the discrimination is easy and certain. Reference is now made to Chronic *general* Pleurisy. Circumscribed pleurisy may involve difficulties in the way of diagnosis to which it will be more appropriate to refer in another connection. To treat of the diagnosis at any length, does not fall within the scope of this Report. After indulging, however, the few foregoing remarks, I may briefly allude to one or two points of practical interest which are incidentally connected with the subject.

Chronic Pleurisy and tuberculosis of the lungs occasionally coexist. This complication does not appear to be of frequent occurrence, but it is desirable to determine the coexistence in individual cases. How is this to be done? I am not prepared to answer this question by submitting conclusions deduced from an extensive series of personal observations. The few facts, however, which have been already presented, involve the practical rule to be adopted. Recollecting this law of tuberculosis, viz., that it invades the lungs successively, on both sides, after an interval of greater or less length, we are to seek on the side which is sound as respects the pleurisy, for the various physical indications of tubercle, such as crackling, jerking respiration, sibilant or mucous râles, bronchophony, etc. If any of these signs are found to be persistent, and confined to the apex of the lung on the nonpleuritic side, they show, as under other circumstances, the presence of a tuberculous deposit on that side. If the deposit be quite abundant, and especially if it have advanced through the changes of softening and excavation, the physical indications will of course be still plainer and more unequivocal. The symptoms, as well as

signs, are to be considered in resolving the question under consideration. Hæmoptysis must be regarded as a very significant event. A prominent and persisting cough, more especially if accompanied with a progressively increasing expectoration, is also ominous, since these do not ordinarily belong to the natural history of simple pleurisy. Marked emaciation, and hectic paroxysms should also lead to strong suspicions of tubercle.

Phthisis, if it do not coexist, may be developed subsequently to Chronic Pleurisy. As a sequel it is probably far less frequent in its occurrence than the views of some late writers would lead us to suppose. Of fifty-three of the cases analyzed by Dr. Blakiston, in which the patients were under observation for some years after the attack of pleurisy, not one became phthisical. So far as my observations go, they show a very small proportion of instances in which this result has followed. That it does occasionally follow, however, is not to be doubted, and the permanent changes in the chest due to the pre-existing pleurisy, offer some obstacles in the way of the physical diagnosis. It is well known to all who are practically conversant with physical exploration, that some of the signs of early tuberculosis are based on the correspondence of the two sides of the chest in a state of health. This natural harmony, which is sufficiently so for practical purposes, is permanently impaired, to a greater or less extent, by Chronic Pleurisy, as will be seen in the division of this Report to be presently taken up. The disparity which succeeds the disease, relates more especially to the resonance on percussion, the mobility, and the comparative development of the vesicular respiration. We cannot determine morbid signs involving the points just mentioned, by a comparison of the two sides of the chest, as we should do had the patient not been affected with Chronic Pleurisy. Under these circumstances reliance in forming a diagnosis must measurably be placed on the same combination of signs and symptoms which have just been referred to in connection with coexisting pleurisy and tuberculosis.

With reference both to coexisting and consecutive phthisis, the study of, and practical acquaintance with all the various indications, physical and rational, of incipient tuberculosis, are eminently important to the physician. It is hardly necessary to add, that the chief object in alluding to the points just noticed, is to show how the disease which is the subject of this Report, affects the importance of these indications.

Another point of practical interest connected with the diagnosis of Chronic Pleurisy, pertains to the conversion of the liquid contents of the chest into pus; in other words, the development of empyema. How is this to be ascertained in individual cases? The data afforded by the present collection of



observations, bearing on this point, will be found to be insufficient for many practical deductions; but I may anticipate so far as to say that the persistent evidences of a large accumulation of liquid effusion within the chest, showing little or no efforts at removal by absorption, and the presence of symptoms denoting no progress toward recovery, but a tendency to a fatal issue, should occasion suspicions of a purulent change. This language is comprehensive, and rather indefinite, but to determine the special significance of particular symptoms, it would be necessary to analyze a series of cases of empyema, and compare the results with those attained by the analysis of cases of ordinary Chronic Pleurisy. The materials for the former labor are not at hand. The nature of the liquid contents of the chest, it may be remarked, can be demonstrated, in individual cases, in which information on this point is desirable, by means of the exploring canula, which the recent experiments of Dr. H. I. Bowditch, of Boston, Mass., have shown may be resorted to with entire impunity, to say the least, for the purpose just mentioned. The withdrawal of the fluid by means of the canula, is another matter, which relates to the subject of treatment.

#### FATALITY.

On examining the fatal cases in this collection, I find that they admit of being divided into several groups, as follows: *First*, cases of death from uncomplicated pleurisy; *second*, cases in which the pleurisy was associated with other grave affections; *third*, cases in which death was due to an intercurrent disease, and, *fourth*, cases in which a fatal termination occurred from causes acting shortly after recovery from the pleurisy. I will state the facts pertaining to the fatality under these several heads.

1. *Death from uncomplicated pleurisy.* The fatality which belongs solely and directly to Chronic Pleurisy, is to be determined by facts falling under this head. Excluding cases in which the issue was unknown, together with a few cases in progress at the present time, and the number of recoveries is *nineteen*. The number of deaths from uncomplicated pleurisy was *four*. Of these four cases the fact of the disease not having been complicated, was autopsically demonstrated in two. The fact was predicated on the history and symptoms in the remaining two cases. Thus, in four of twenty-three cases of Chronic Pleurisy, a fatal result was due, so far as could be ascertained, to the pleurisy exclusively.

2. *Death from pleurisy complicated with other grave affections.* Seven fatal cases are embraced in this category. Adding these to the cases which recovered, nineteen, and the ratio of fatality is as seven to twenty-six. The affections complicating the pleurisy were in three cases tubercle; in two cases fever; in one case laryngitis leading to cedema glottidis and sudden death, and in one case pericarditis, ascites and double pleurisy.

3. *Death from an intercurrent affection.* One patient, a child, died with a bowel complaint, which occurred while the pleurisy was progressing favorably.

4. *Death from subsequent affections.* One patient died shortly after recovering from the pleurisy, with what is said to be *bilious colic*. Another patient died of a repetition of the pleurisy occurring several months after the recovery from the first attack which seemed to be complete. This case judged by the symptoms, was complicated with pericarditis. The fact of the fatal termination in this case was never positively ascertained, but when last seen the patient was near the close of life, and it is therefore assumed that it ended fatally.

In the foregoing account are excluded four cases of perforation, all of which ended fatally, and two cases of circumscribed pleurisy one of which was fatal.

Adding together the fatal cases in all the above groups, including the four cases in which there was perforation, and the fatal case in which the pleurisy was circumscribed, and the sum is nineteen. In the same number of cases, nineteen, the patients were known to have recovered from the pleurisy, and in nine cases the termination is unknown.

From the results which have been submitted the general conclusions to be drawn are, that Chronic Pleurisy, *per se*, is fatal in only a very small proportion of cases; that the majority of deaths occurring during the progress of, or shortly after the disease, are due to its complications, or to intercurrent and subsequent affections; but taking into view all the circumstances connected with the origin, progress, and immediate tendencies of the disease, the rate of mortality is about fifty per cent.

## DURATION.

*Fatal Cases.*

No.		<i>Remarks.</i>
1.	Two months after admission into hospital.	Associated with tubercle. Autopsy.
2.	Six weeks after coming under observation. Previous duration not ascertained.	Empyema. Uncomplicated. Autopsy.
3.	Several weeks after coming under observation. Previous duration not ascertained.	Uncomplicated. Autopsy.
4.	Seven days after admission into hospital.	Lesions of typhoid fever. Had a short time before had scarlatina. Autopsy.
5.	Seven weeks after date of attack.	Supposed to be uncomplicated. No autopsy.
6.	Five months.	Supposed to be uncomplicated. No autopsy.
7.	Forty days.	Patient supposed to have fever. Empyema. Autopsy.
8.	Not ascertained.	Complicated with laryngitis, and sudden death from œdema glottidis. No tubercle. Autopsy.
9.	Two months.	Associated with tubercle. Autopsy.
10.	Not ascertained.	Complicated with ascites, pericarditis and double pleurisy.
11.	Ten months.	Associated with tubercle. No autopsy.
12.	Six months.	Died of what was called bilious colic. No autopsy.
13.	Several months.	Died with bowel complaint while apparently recovering from pleurisy. No autopsy.
14.	About two years.	Died from second attack after having appeared free from the disease for a year. No autopsy.

It is evident that Chronic Pleurisy, when it proves fatal, has no definite duration. When it is complicated with other affections, the issue, of course, in a greater or less degree, is dependent on the nature and extent of the latter. When uncomplicated, however, so far as any conclusion on this point can be drawn from the foregoing data, the duration is variable.

#### *Cases not Fatal.*

In order to determine with precision the duration in cases ending in recovery, it is necessary to fix, in each case, the period when the processes of restoration are completed. These processes involve absorption of the liquid contained in the pleural cavity; the organization of the effused fibrin, etc. It must be difficult, with all the aid which physical exploration affords, to arrive at exact information on this point. An analysis of a collection of observations relating thereto would be interesting. The histories that I have preserved do not embrace data sufficient for such an analysis. As before stated, in a large proportion of the cases the patients did not remain under my observation during the progress of the disease; and in those in which the opportunity was offered, pains were not taken to obtain and record the results of repeated examinations of the chest, while convalescence was going on. I have uniformly observed that at the time when, judged by rational signs, recovery was nearly, or quite established, the physical evidences of the presence of more or less liquid in the chest, persisted. In several instances the patients regarded themselves well, and were able to take active exercise, while the quantity of liquid effusion was considerable. I have already cited illustrations of this, and also of the fact that active occupation may be continued from the beginning of the disease during the greater part or the whole of its career. Even many months after apparent recovery, I have found flatness and absence of respiration over the lower third of the affected side. For the completion of the processes of restoration a long period is required. I regret that my recorded observations do not enable me to state the average period with more exactness.

There is another aspect under which the duration may be viewed, viz., from the date of attack to the time when patients are sufficiently recovered to resume their usual avocations. The nature of the occupation, and other circumstances, irrespective of the condition of the chest, it is obvious, will affect the duration in this aspect. I will, however, give the facts in the few instances in which the histories contain information relative to this point.

CASE 1. The patient was a soldier, and remained in hospital thirty-two days, when he was considered by the medical officer, and himself, well enough to be returned for duty. The chest, however, was two-thirds filled with liquid.

CASE 2. Recovered sufficiently to resume the duties of a physician in about three months. For several months afterward he was feeble, and subject to cough. Recovered at length his former health.

CASE 3. Was able in about four months, to engage in tolerably active business, but was short-winded on exertion, and the physical signs of considerable liquid effusion continued. He progressively improved, until he recovered perfect health.

CASE 4. Apparently quite recovered in about six months.

CASE 5. After a few months (precise number not stated) able to be up and about, but not able to engage in active business for three years after date of attack. During all this time physical evidences of liquid effusion continued.

CASE 6. Patient considered himself quite well in about four months.

CASE 7. Entered hospital a week after attack, and was discharged convalescent in two months. Condition of chest at time of discharge not noted.

CASE 8. Able to be up and walk about freely in about six months. A year afterward reported quite well, and able to do housework, being a female domestic. The quantity of liquid effusion in this case was very large.

It appears from these cases that in Chronic Pleurisy, recovery sufficiently to resume the active duties of life, is not likely to occur within a very short period. Several months, it may be expected, will elapse before the patient will reach this stage of improvement; and complete restoration will require an indefinite period beyond apparent convalescence.

#### REMOTE EFFECTS.

What remote effects, local and general, follow Chronic Pleurisy? Is the chest apt to be permanently damaged? To what extent, if at all, are the physical powers of the organism usually impaired? Is there a liability to



renewed attacks, or is the patient peculiarly exposed to the supervention of other affections? These questions, it is obvious, are to be answered by reference to the results of an analysis of a sufficient number of cases remaining under observation for a considerable length of time after recovery from the disease. The group of cases in this collection in which the diagnosis was retrospective, will furnish some facts pertaining to this subject. In a portion, also, of the cases belonging to the other groups, the disease occurred several years ago, the condition of the patients in the mean time being known. Several of the cases, however, are of too recent date to be studied in this point of view; and in several the patients were lost sight of directly, or shortly after coming under notice. In fourteen of the forty-seven cases the consecutive history extends over a sufficient period to furnish information relating to remote effects. The facts noted with respect to these cases, respectively, are as follows:

CASE 1. In this case the patient had experienced an attack of Chronic Pleurisy forty years before her death in April, 1847. She was confined to her room with the pleuritic affection for several months, and remained an invalid for several years. The history with greater particularity of detail was not obtained. After recovering entirely from the disease, she enjoyed excellent health until a few years before her death, when she suffered from palpitations and paroxysms of sinking. She had no medical treatment for these symptoms until about a fortnight before her death, when she came under the care of Dr. Wilcox, of this city. I saw her in consultation with Dr. W. She presented the physical evidences of greatly enlarged heart, without valvular lesions. The action of the heart was exceedingly irregular, and accompanied by paroxysms of great suffering from orthopnoea. At the autopsy the heart was found to weigh 16 oz., the cavities greatly dilated, the walls not thickened, and the valves free from disease.

In the right chest, which had been the seat of the pleurisy forty years before, the pleural surfaces were united throughout, with firm adhesions. The pleural cavity was entirely abolished. Lungs on both sides free from disease. Moderate effusion of serum had taken place in the left pleural cavity.

CASE 2. This patient experienced the disease five years ago. After several months he recovered sufficiently to resume the duties of a medical practitioner, but he remained feeble, and was subject to cough for about a year. He has since continued in good health, and is now free from any evidences of pulmonary or other disease.

CASE 3. This patient was supposed, from the history of symptoms, to have had the disease three years prior to the time of examination. She was then, i. e., at time of examination, probably laboring under tuberculosis, and died a few months afterward.

CASE 4. This case occurred a little over four years ago. After a few months the patient began gradually to resume active occupation as an outdoor clerk in a lumber yard. After the lapse of one or two years he was able to endure as much physical activity as the most robust, and has remained up to the present time in perfect health. The quantity of liquid effusion in this case was very large, occurring in the left side, and removing the heart to the right of the sternum.

CASE 5. The patient was a child six or seven years of age. The case was examined one and a half years after the date of the attack. The only ailment at that time was debility, and deficient growth. Four years after the attack, it had continued well, but was more feeble, and had grown less than the average of children of the same age.

CASE 6. This case came under my notice four years after an attack of Chronic Pleurisy. The patient was laboring under tuberculosis, which, from the history, appeared to have supervened about two years after the pleuritic attack. She died a few months afterward.

CASE 7. This patient came to me for an examination of the chest seven months after an attack of Chronic Pleurisy. There was at this time marked contraction of the chest, with the physical evidences of liquid effusion still at the lower part of the chest. This examination was made about three years ago. The patient has been very feeble for months, and it is not expected that she will live long. She is supposed to be in the last stage of tuberculosis. She resides at a great distance, and the above information is all that I have obtained relative to the progress of the case.

CASE 8. This case came under observation six months after the date of attack. The patient had then quite recovered; the liquid effusion was nearly absorbed, and the chest considerably contracted. It is now three and a half years after the attack. The patient, since the time of my examination, has been in good health, and so continues at this time.

CASE 9. The patient in this case was a lad ten years of age. He came under my notice two months after the date of attack. The chest was then filled with liquid effusion. He recovered after a few months, and has remained up to the present time, a period somewhat less than three years, in excellent health.

CASE 10. This case came under observation a little more than two years ago. The patient had had an attack of Chronic Pleurisy twenty months previous. He presented, still, evidences of considerable liquid effusion. The chest afterward exhibited marked contraction. Since coming under my observation he has had two attacks of hæmoptysis, in one of which the hæmorrhage was pretty profuse, and continued more or less for several days. He has, however, been steadily improving in flesh and strength, and at this time appears in perfect health, being able to engage in active occupation as an out-door clerk.

CASE 11. In this case the patient was examined by me three weeks after the date of attack. The quantity of liquid effusion was then moderate. This was fourteen months ago. He recovered sufficiently to resume the duties of an in-door clerk, but has always remained rather feeble, with more or less cough. On a second examination, a year after the first, the physical signs of tuberculosis were unequivocal. There is ground for the suspicion that the tuberculous deposit preceded the attack of pleurisy. My knowledge of the case was derived at the examinations just referred to. The patient has removed to a southern climate.

CASE 12. In this case I made an examination of the chest about fourteen months after the date of the attack. The patient was a farmer, 47 years of age. There was marked contraction of the chest. There were no symptoms of pulmonary disease present, the only subject of complaint being a diminished ability to perform active labor.

CASE 13. The patient in this case, came under treatment four weeks after the date of attack. This was a little less than two years ago. She has remained under observation up to the present time. The left side was the side affected, and the quantity of liquid effusion was very large, removing the heart to the right of the sternum. Great contraction of the chest followed the absorption of the effused fluid. The patient, a female domestic, for a year past has been able to do laborious house work, and is now in excellent health.



CASE 14. The date of the disease in this case was five years prior to the examination. The left side was still considerably contracted. There existed at the time of the examination, hypertrophy of the heart, to which the symptoms present in the case were referable. From the history it appeared probable that the pleurisy was complicated with pericarditis.

Reviewing the facts contained in the foregoing account of a limited number of cases, it appears that in precisely one-half (seven) the patients preserved for several years after recovery, so long as they remained under observation, or up to the present time, excellent health. In two other cases the health was tolerably good.

In two cases hypertrophy of the heart supervened, but in one of these cases the latter affection was discovered at a period quite remote, at an advanced age; and in the other case the pleurisy was probably complicated with pericarditis. The cases furnish no evidence of a special tendency, after Chronic Pleurisy, to any disease except tubercle. In *three* cases the subsequent development of tuberculosis was highly probable, although not demonstrated, and in one case the latter disease was positively determined. It has been a current opinion that Chronic Pleurisy predisposes strongly to phthisis. There is reason to think that this opinion is incorrect, having been based on isolated observations. In the analysis by Dr. Blakiston, to which I have before referred, not one out of fifty-three cases became phthisical during the lapse of several years after recovery from pleurisy. This result is striking, for it might be expected that out of so large a number of cases of any disease occurring as does pleurisy, for the most part, at an early age, tubercle would be likely to affect, in the course of several years, a certain proportion. In estimating the influence of pleurisy, or any disease, in determining the subsequent development of tubercle, the liability to the latter, irrespective of preceding affections, is, of course, to be taken into account. Giving to this consideration a certain degree of weight, and bearing in mind that in four of the five cases neither the presence of tubercle subsequent, nor its absence prior to the pleurisy, were demonstratively established, and it follows that the few cases in the present collection analyzed with reference to this point, show but a slight, if any tendency to phthisis to be among the consequences of Chronic Pleurisy.

The remote effects of Chronic Pleurisy upon the chest, so far as they affect the results of physical exploration, constitute an interesting branch of inquiry. For several years after recovery, the symmetry of the two sides, as respects the equality of percussion sounds, and the relative intensity of the vesicular

murmur, is impaired. It is probable that this effect frequently continues to some extent through life. A series of careful examinations of the chests of persons who had experienced pleurisy many years previous is a desideratum. The object, however, relates mainly to the subject of physical diagnosis. There is one point to which no allusion was made in connection with the physical signs, which may properly be ranked among the remote effects. This is the gradual expansion of the chest, on the affected side, after contraction has taken place in consequence of absorption of the liquid effusion. I have not taken pains to make careful examinations relative to this point. I have had occasion, however, to observe that this subsequent expansion does take place in cases in which there had been marked contraction. In case No. 4, in the foregoing group, four years after the date of attack, the chest on the affected side had enlarged so as to appear nearly equal in capacity to the other. In this case the quantity of liquid effusion was very great, removing the heart to the right of the sternum, and contraction subsequent on absorption was present in a marked degree, two years after the date of attack. In case No. 13, there also existed very large effusion removing the heart beyond the right margin of the sternum. Absorption was followed in this case by very marked contraction. At the present time, however, two years after the date of attack, the affected side has expanded so that on measurement on a line passing over the nipple it falls short by less than half an inch the dimensions of the right side, the relations of the two sides to each other being about normal. Considerable contraction is permanent in some instances. This was shown in case No. 14, in which it was observed five years after the date of attack. It is probable that age has an influence in determining the degree of expansion. In the case last referred to, the age of the patient is not stated, but he was in the neighborhood of forty years. In the two cases previously referred to the patients were young, both being twenty years of age.

#### CIRCUMSCRIBED PLEURISY.

The pleurisy was circumscribed in two cases. In one, the character of the disease was ascertained by the symptoms and signs during life, the patient recovering; in the other, the affection was supposed to be seated in the liver, and the diagnosis rectified by the autopsy, the case proving fatal. The circumstances belonging to the history of both cases, considering the infrequency of this form of uncomplicated pleurisy, seem to warrant a brief report of each case.

CASE 1. The patient was a female, fourteen years of age. The case was referred to me for examination by Dr. G. Conger, of Niagara Falls, in July, 1850. At the time of my examination the following were the facts noted: "She menstruates regularly. Aspect is not morbid. She is not emaciated, and has not lost flesh of late. She is highly nervous, weeping at the apprehension of a physical exploration. There is no spinal tenderness. Appetite and digestion tolerable. The friends state that, when an infant, she had whooping cough severely, which was followed by inflammation of the lungs. She has ever since been subject to a cough, loud and hard, and attended usually by small, transparent, frothy expectoration. Five weeks ago she suddenly expectorated a quantity of foetid purulent matter. Since that time she has had several (seven or eight) similar attacks. She continues to expectorate the same matter for a day or two after the attack commences, and then the expectoration is no greater than usual. The cough has diminished since these discharges took place. She has kept her bed for a week during the past five weeks, and now her strength is regained so that she came to this city without much fatigue.

On examination of the chest I find moderate dullness on percussion over the upper third of the right side, with no distinct abnormal modification of the respiratory sound. Absolute flatness exists over the lower, and most of the middle third, on the right side, with absence of respiration, in front and laterally. Posteriorly, on the right side, the resonance is clear as low as is usual in a state of health. I discover no râles, nor cavernous nor bronchial respiration. There is tenderness on percussion over the right mamma. No tenderness, nor evidences of enlargement of the liver.

From the foregoing signs, and the history, I inferred the non-existence of tuberculosis; and that the purulent expectoration, occurring, thus, at several epochs, was due to circumscribed collections between the pleural surfaces, discharging through the bronchial tubes, rather than to abscesses in the substance of the lung, or in neighboring organs. I have given all the data which were noted, so that the reader may form his own opinion as to the correctness of the diagnosis.

I saw the patient again in March, 1851. She was then quite well. On a slight examination, however, I found that there was still flatness over the lower part of the chest on the right side. She was in good flesh, and had no cough. She had had no purulent expectoration for some time.

I have since been informed by Dr. Conger, that subsequent to the time of my last seeing her, she had another recurrence of purulent expectoration, from which she recovered as before, and afterward appeared in good health.

CASE 2. The patient was an Irishman, a peddler and laborer, aged forty-five years. He came under my care at the Buffalo Hospital of the Sisters of Charity, at the commencement of my winter service, Oct. 1, 1851. He had entered about a fortnight before. The previous history was as follows: Attacked with cough about two years ago, and has had more or less cough from that time to the present. Has had several attacks of hæmoptysis, the first having been early in the disease. Has occasionally had chills, and stitch pains in the chest frequently. Has had diarrhœa for the last ten days, which still continues. Has to-day attempted to sit up for the first time since his admission, and for two weeks previous. Was not attended by any physician before entering the hospital.

*Present Symptoms:* Not greatly emaciated. Aspect pallid. Pulse 72, and extremely feeble. Two or three dejections daily. Expectoration copious and purulent.

Physical examination was deferred. The case was presumed to be one of tuberculosis.

Oct. 7, it was noted that the patient had expectorated during the past six hours about ten ounces of pus, and was still raising it freely at short intervals. Physical examination on this day gave the following results: Emaciation not sufficient to render the outline of the ribs visible. Respiration not labored, 24 per minute. Clear resonance at the summit of the chest on both sides; the pitch of sound being somewhat raised on the right side, but the resonance clear. Flatness on the right side extends from the bottom of the chest as high as the fourth rib. The chest on the right side, at the inferior part, *and below*, is tender to the touch. Some degree of tenderness, also, exists on the left side. He refers the pains to the inferior and lateral portions of the right side. The pain is not severe. It is lancinating.

Posteriorly, in the interscapular space, the resonance is clear on both sides, the pitch being elevated on the right side. Below the inferior angle of the scapula, and over the lower part of the scapula, on the right side, flatness exists.

Laterally, on the right side, there is flatness.

The respiration on the left side is exaggerated. Posteriorly, on the right side, the respiratory sound is feeble, tubular, and accompanied by a fine mucous or subcrepitant râle. At the upper third, on the right side, anteriorly it is feeble but not tubular. This obtains above the fourth rib. Below the fourth rib there is absence of respiratory sound, and a distinct, but not loud friction sound heard in both acts of respiration.

Oct. 12. Quantity of expectoration diminished by one-half, or two-thirds



according to a rough estimation. Diarrhœa continues to be a troublesome symptom, and the house student thought he had discovered pus in the evacuations. The matter expectorated is pure pus, with little or no mucus.

In view of the foregoing facts, hepatic abscess, evacuating through the lungs, was suspected. The reasons for this opinion are set forth in the following quotation from the hospital records: "From the symptoms and signs in this case, the probable diagnosis is, purulent formation within the liver, evacuating through the bronchi. This presumptive diagnosis is based on the following points:

"1. The profuse purulent expectoration without the physical signs of a cavity in the lungs.

"2. The slight evidences of disease at the summit; consisting only of slight elevation of pitch on percussion on the right side, the left side appearing perfectly healthy; the respirations not accelerated nor labored; the pulse unaffected; the emaciation not extreme, etc. — all these circumstances excluding tuberculosis.

"3. Empyema being excluded by the absence of the evidences of considerable pleuritic effusion, i. e., no signs that the right chest *has been* distended by liquid effusion, nor that it now exists in much quantity. In this connection it should be stated that distinct bronchophony exists at the angle of the scapula on the right side.

"4. Pneumonitis is excluded by the absence of evidence in the history that this disease has existed; by the improbability of this disease, had it existed, eventuating in abscess; and the absence of the physical signs of a cavity.

"5. The presence of tenderness below the chest on the right, over the site of the liver.

"6. Pus in the evacuations, if this be true. The presence of this symptom needs confirmation.

"7. All the signs and symptoms are rationally explicable on the supposition of a purulent formation in the liver, at the same time that other supposable affections adequate to the production of so large a quantity of purulent expectoration must be excluded."

It will be perceived that circumscribed Chronic Pleurisy was overlooked in canvassing the evidence in behalf of the several affections which might be supposed to be present in this case. The patient died on the first day of the November following, and the autopsy revealed the following condition of the chest:

At the inferior part of the right chest there existed a pleuritic abscess

about five or six inches in width, extending from the lower part of the sternum quite around the right side of the chest. The pleural surface in the strip just mentioned, exhibited a rough granular appearance, and the membrane was much thickened. Above the strip the pleural surfaces were united by rather feeble adhesions. The lower lobe of the lung on the right side was solidified. The lungs otherwise healthy. The situation of the pleuritic abscess, or circumscribed empyema, was such as to coincide with the physical signs.

A circumstance mentioned by the patient, although not recorded in the previous history, may, perhaps, serve to explain the production of the circumscribed pleurisy in this case. For some time before being attacked with the disease, he had followed the avocation of a pedler, and had been accustomed to carry a pack, resting heavily on the right side, and pressing particularly on the lower part of the chest on that side. He stated that it frequently occasioned severe pain in the situation in which he experienced pain during the progress of the disease, and over the site of the pleurisy. The patient referred the origin of the disease to this cause.

#### PLEURISY CONSEQUENT ON PERFORATION OF LUNG.

In four cases pleurisy was developed in consequence of perforation of lung. In two of these cases the perforation occurred in the progress of tuberculous disease, and the pleurisy was, thus, a complication of phthisis. In the remaining two cases circumscribed gangrene of lung preceded the perforation, the latter taking place over the gangrenous part. A succinct account of these cases, severally, may possess some interest.

CASE 1. The patient, a male, was twenty-one years of age. There existed a family predisposition to tubercle, and he had evidently labored under the disease for more than a year. He was not under my observation prior to the perforation. He was able to be up and dressed when the perforation occurred. It took place during a violent fit of coughing, and was signalized by the sudden development of acute pain, and difficulty of breathing. I saw the patient on the third day after the perforation. The pain and dyspnoea was then much diminished. He was unable to lie on the left side, which was the side in which was the perforation. The cough and expectoration were less after the perforation than before. The pulse was from 130 to 140.

The left side was visibly enlarged, and almost immovable in respiration.

There was tympanitic resonance on this side except at the upper third posteriorly. Metallic tinkling was distinctly heard over the middle third; three or four tinkling sounds succeeding expiration, and occasionally accompanying inspiration. This sign was uniformly present at repeated acts of listening during the visit. It was absent at a visit on a subsequent day. At the next visit, a few days after the first (the precise number of days does not appear in the record) the left chest was still more largely distended, and the intercostal spaces elevated. He suffered much from dyspnœa.

He died shortly afterward, the precise date not being given. There was no autopsy.

CASE 2. The patient was a female, aged about thirty-five. I had examined the chest and determined the presence of tubercle months before the perforation occurred. At that time she was not under my charge. She came under my care in Sept., 1849, and at this time the evidences of perforation were present, and the time of its occurrence could not be ascertained, or, at all events, it does not appear from the notes that it was ascertained. The perforation occurred in the left side. There was tympanitic resonance at the top of the left shoulder and posteriorly at the summit of the chest. Below flatness. A loud cavernous respiration was present. A distinct tinkling sound was heard accompanying both inspiration and expiration, especially the latter; two, three, four and even five tinkling sounds with each act. This sign was not uniformly present. Lying down suddenly frequently occasioned a plashing noise, which had arrested her attention, and had also been frequently heard by her attendants. I was able distinctly to hear it as she lay on her right side and moved the body to and fro. I could not develop it by succussion while she was in a sitting posture.

She was quite feeble, but was accustomed to ride out on every pleasant day.

Pulse 120. Respiration accelerated. Some fœtor in the expectoration was occasionally observed, but not in a marked degree.

Death occurred about two months after the case came under my charge. The patient suffered greatly from paroxysm of dyspnœa toward the close of life. There was no autopsy.

CASE 3. The patient, a male, was forty-five years of age. He had suffered from epilepsy for two years, which had considerably impaired the mental faculties. He had long been accustomed to use ardent spirits freely, and sometimes to excess.

I saw the patient, first, on the 28th Jan., 1852, in consultation. He had the day previous had a severe epileptic paroxysm. Prior to this date he had not had an attack for some time. At the time of my visit he appeared much prostrated, and had some cough with expectoration. On physical exploration I found only some bronchial râles, without any of the signs of solidification, and I supposed he was simply laboring under an attack of bronchitis.

I did not again visit him until the 5th of February. He then had a very foetid expectoration, of a gangrenous odor: and there were evidences of solidification at the inferior part of the chest on the right side anteriorly and posteriorly.

I saw him next on the 8th instant. The foetid expectoration had ceased. He now had little or no expectoration. His breath was occasionally foetid. He was greatly prostrated. The respirations were frequent and labored. Pulse frequent and tolerably developed. Some delirium. He had had a chill, and experienced acute pain in the right chest. He took food without reluctance and with some relish. On examination of the chest I found the physical evidences of perforation and pneumo-hydro-thorax as follows: tympanitic resonance over the upper and middle thirds of right chest anteriorly. Metallic tinkling at the inferior third just below the level of the nipple. The respiration over the middle third was blowing and low in pitch. At the upper third it was bronchial, i. e. tubular and high in pitch. Posteriorly at the upper third the respiration was bronchial. Over the middle third, posteriorly, it was blowing, feeble and low in pitch.

Death occurred on the night of the 10th of February, and the chest was examined, *post mortem*, on the 13th, by Prof. John C. Dalton, jr., who furnished the following report of the morbid appearances:\*

"Autopsy of Mr. S—, February 13th, 1852. On opening the cavity of the right pleura, a considerable quantity of rather foetid gas escaped, and on raising the sternum the same cavity was found to contain about two pints of a dingy, yellowish-gray purulent fluid. The pleural surface at the anterior part of the chest was covered by a thin coating of recent lymph.

"The right lung, reduced to about one-fifth of its natural size, was compressed against the spine and the posterior wall of the chest. Before removing the fluid from the pleural cavity, a pipe was inserted into the trachea, and on inflating the lungs the air escaped freely in large bubbles, from a

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\* This is one of the cases given in the Appendix to Prize Essay on Variations in Pitch, etc.



point situated toward the posterior part of the right lung, about the junction of its upper and middle thirds. The right lung, removed from the chest, was found to be completely carnified by pressure, except in those parts occupied by disease. No air-cells were visible anywhere, and the whole lung was destitute of crepitation. The lobes were adherent to each other by recent lymph. The upper third of the lower lobe was occupied by gangrene, which had reached an advanced stage, the pulmonary tissue forming a soft, shreddy, disintegrated mass of a fetid odor, and a dirty, grayish color, and infiltrated with purulent fluid. A gangrenous cavity of considerable size, had apparently existed at this spot before the compression of the lung. The opening by which it had communicated with the pleural cavity was about the size of a goose-quill, and situated posteriorly at the very uttermost portion of the lower lobe. The limits of the gangrenous portion of the lung, were well defined, but only a very little inflammation existed in its neighborhood, the solidification of the pulmonary tissue, except just outside the limits of this gangrenous cavity, being entirely of a passive character, and due to its compression by the pleuritic effusion. The left lung and pleura were healthy. There was no tubercle anywhere."

CASE 4. The patient was an Irish laborer, aged about thirty. He had complained of pain in the left side for two months, and had received medical treatment at the hands of Dr. Ring, of this city. The pain was not very severe, nor accompanied by sufficient embarrassment of respiration to prevent him from laboring. He was a hard-working man, not intemperate, so far as Dr. R. could learn, but lived in dirt and destitution, two families, each consisting of several members, occupying one small room, in an insalubrious part of the city.

About a week before his death the pain was suddenly increased; respiration labored; moderate febrile movement became developed, and he had a hard spasmodic cough. He was bled by Dr. R., took cathartics, with nauseating doses of ipecacuanha and antimony. The symptoms were not relieved. I saw him, with Dr. R., two days before his death, but owing to the filth of the place, and personal indisposition, the physical examination was very hurried. I found flatness on percussion over the lower part of the left chest, and, in front, absence of respiratory sound. Posteriorly I thought I recognized a faint crepitation. The pulse was 120 and tolerably developed. He complained of pain in the left side on respiration. The chest on the left side was tender on percussion. He had had considerable expectoration, which Dr. Ring had repeatedly inspected with care. It had not been fetid.

On the day before his death he was transferred to the Hospital of the Sisters of Charity. Dr. Geo. N. Burwell, the attending physician, at that time on service, saw him once. He was then suffering from severe pain in the left side, with labored respiration. Dr. B. found flatness on percussion at the inferior part of the left chest, tympanitic resonance at the superior part, and well-marked metallic tinkling. The heart was displaced, so that its motions were visible to the right of the sternum. Exaggerated respiration existed on the right side. Fœtor of the expectoration was not observed while he was in the hospital. Death occurred, by apnœa.

At the autopsy, fourteen hours after death, at which I was present by invitation of Dr. B., the following morbid appearances were revealed:—The chest being opened, a quantity of fœtid gas escaped. The left pleural cavity was filled with dirty ditch-water-like fluid, with shreds of fibrin. The fœtor was strong and characteristic. The quantity of liquid was estimated to be three or four quarts. Before removing all the liquid, the trachea was opened, and on introducing a blow-pipe, the perforation was demonstrated by large bubbles at the lower part of the chest. On removing the liquid, the pleura was found to be covered with layers of semi-organized fibrin. The pleurisy had evidently been of longer duration than the illness of the week immediately preceding his death, i. e. from the date of his giving up work and taking to the bed. It had doubtless existed while he continued at work, complaining of pain in the side. The lung on the left side was compressed to the back part of the chest, but extended to the lower part, having become attached at its inferior extremity to the diaphragm. It was free from tubercle. It was not solidified except by compression. At the lower part of the inferior lobe a perforation existed large enough to receive the end of the little finger. This opened into a gangrenous cavity of the size of a small English walnut. This cavity presented, all sides, a gangrenous layer about half an inch in thickness. The gangrene was distinctly circumscribed, and no solidification in its neighborhood. On closing the perforation the lung on this side was readily inflated.

In the case last given, the occurrence of gangrene with perforation as a complication of Chronic Pleurisy is an interesting fact. The absence of all fœtor in the expectoration in this case is worthy of note.

It will be perceived that in each of the four cases the existence of perforation was evidenced by the pathognomonic physical sign — metallic tinkling. So far as these few cases go, they show the value which this sign derives from its constancy, being one of the most characteristic of all the physical signs when present.

The cases illustrate the speedily fatal termination, by apnoea, which generally follows the occurrence of perforation; and, also, the fact that occasionally life may be prolonged under these circumstances for several weeks, and even months.

## CASES OF EMPYEMA.

The liquid contents of the pleural cavity were ascertained to be purulent in three cases only. In one of these cases a collection of pus took place beneath the skin communicating with the cavity of the chest, which was opened, and the contents discharged. In the other cases death occurred without any operation. An abstract of the history in each of the cases will not occupy much space.

CASE 1. The patient was a male, aged thirty, a cabinet-maker, of intemperate habits. The case came under my observation in January 12, 1841. He was attended at that time by Dr. Samo, of this city. He was ill in a refectory, without conveniences or comforts. At the time I visited him under these circumstances the following were the symptoms:—Face ghastly, and expression anxious. Respiration labored. Anorexia. Incessant hacking cough. Pulse at morning of normal frequency, at evening accelerated. Voice hollow. Great restlessness, frequently getting out of bed. Shortly afterward the pulse became very frequent and intermitting; the lower extremities cold; lividity at roots of nails, and a fatal termination was daily expected. He retained muscular strength to a surprising degree, getting out of bed, and insisting upon sitting up, while the foregoing symptoms were present.

After a few days, improvement took place. The chest, which had not before been examined with much care, was now found to be enlarged on the left side, and universal flatness on percussion, with absence of respiratory sound. He now had good appetite; obtained quiet sleep; respiration became less labored. He had occasionally pretty severe pain in the left chest. Some œdema of feet. Pain in feet, and some inability to control motions of lower extremities. The action of the heart occasioned a thrill or jarring motion over the whole chest, no point of impulse being perceptible. The case ended fatally February 26, 1841.

The left pleural cavity was found to contain several quarts of laudable, inodorous pus. Pleural surfaces covered with layers of fibrin. Lung compressed to a mass of the breadth and thickness of the hand. No tubercle.

Some adhesions in the right side; otherwise no morbid appearances. Moderate hypertrophy of the left ventricle of heart existed. Aortic and left auriculo-ventricular valves thickened.

CASE 2. The patient in this case was a female child, aged six years, delicate, but usually had good health. She was attacked December 14, 1845, with vomiting, accompanied by febrile movement. Stupor followed, leading to the supposition of congestion or effusion within the head. She emerged from this state, and appeared to be improving, when, December 22, there was a change for the worse. Cough, which had not before existed, was now a troublesome symptom. The respirations were accelerated and labored. Stupor again occurred, with great prostration, and frequent pulse, the respiration continuing accelerated and labored. Diarrhœa, with mucous and bloody stools, occurred. The mouth became aphthous. She had frequent paroxysms of distress accompanied by coughing. In these paroxysms she continued to throw herself about, and cry until exhausted. After this she gradually improved, consciousness returned, the mouth became well, and January 4 she seemed convalescing. The constantly lay on the right side. The pulse continued accelerated, being 130. She was free from pain, had good appetite, and there were no pulmonary symptoms to attract attention. January 22, the parents first discovered enlargement of the chest on the right side. The chest on this side was found to be immovable in respiration; the intercostal spaces elevated; flat on percussion, with no respiratory sound.

Death took place four days afterward.

At the autopsy, twenty-one hours after death, the right chest was found to be filled with laudable, inodorous pus. The lung was compressed into a mass of the size of the hand against the mediastinum. No tubercle. The pleural surfaces covered with layers of fibrin in different stages of organization. Lung on left side free from disease. Heart normal.

CASE 3. The patient was a female, twelve years of age. I have already referred to some of the circumstances of the history of this case, under the head of the causation of Chronic Pleurisy. She came under my observation July 16, 1845. She had been attacked suddenly three weeks before with *pain in the back*, extending from the spine to the lateral portion of the right chest. A swelling on the right side posteriorly and laterally was observed. Dr. Josiah Trowbridge, of this city, saw her twice, and Dr. A. S. Sprague once. Both thought she was laboring under phlegmonous inflammation exterior to the walls of the chest, and looked for the formation of matter in a



few days. Poultices were applied until the abscess should be ready to open. Dr. Trowbridge saw her, the first time, a week after the date of attack, and, the second time, a week after the first visit. She was seen by Dr. Sprague two or three days after the last visit by Dr. T. The swelling was tender to the touch, and Dr. Trowbridge thought he discovered fluctuation.

I saw her three weeks after the date of the attack. She was then obliged to maintain a sitting posture. The respirations were accelerated. She complained of pain in the right side. There was manifest enlargement of this side. The intercostal spaces were elevated. Tenderness existed over the right chest posteriorly and laterally. There was universal flatness on percussion over the right side. No respiratory sound save at the summit, before and behind, and in these situations bronchial.

July 19. Made farther record of symptoms as follows:—Has not had any cough, and has none now. No chills or rigors. Had much febrile movement at first. Skin now dry and temperature raised. Pulse 135. Occasionally slight perspiration. Tongue not dry nor coated. Some appetite. Not much thirst. Is more comfortable than on the 16th. Is able to lie down with more ease. She is greatly prostrated; speaks in a very feeble, almost inaudible voice, and the least exertion occasions panting. Intercostal spaces protruded to a level with the ribs, but, on measurement, both sides now equal. Other physical signs the same.

July 17. Much improved. Breathes comfortably, except after exertion. Pulse 100. The feet, since the date of the preceding record, have been very œdematous, but are now of natural size. *Dullness on percussion extends to left side beyond the sternum.* Right side almost immovable in respiration.

August 22. Tumor about three inches below the inferior angle of right scapula, evidently fluctuating. Dr. Trowbridge, who visited the patient with me on this date, stated that the former tumefaction occupied the same site, and that he was satisfied at his former visits that there was matter deeply seated.

August 24. Tumor opened by Prof. Hamilton, and several ounces of laudable, inodorous pus discharged. Flow of pus increased by coughing, and changes of position.

August 29. Free discharge of pus continues, quantity escaping in twenty-four hours, estimated at a pint. Expelled freely, and with force, by acts of coughing. General health improved. Appetite good. She is dressed and about the house. Pulse frequent.

September 14. Aspect improved. Appetite good. Has gained in weight and strength. Discharge diminished about one-half. Still laudable pus.



October 27. Much improved. Appetite good. Gained in weight and strength. Able to be out of doors, and to take exercise freely, but is put out of breath more readily than in health. No pain. Discharge continues, varying in quantity on different days. Sometimes a tablespoonful, and sometimes more in quantity. Still healthy pus. Little or no tenderness on pressure. No cough, and at no time has this symptom been present. Full inspiration occasions no pain. Is able to sing with ease and strength. Pulse accelerated. Tongue clean. Right chest contracted, and flat over lower half on all sides. Percussion sound relatively dull above posteriorly. Tympanitic resonance at the upper third anteriorly. Absence of respiratory sound over the portions of chest flat on percussion. Tubular in interscapular space, and obscurely so at the upper part anteriorly. Bronchophony at summit before and behind, and also vocal fremitus.

She has taken no medicine for the last two months. She was bled by Dr. Trowbridge. After my visit she took mercury in combination with squill and digitalis, not carried to pyalism. The chest was vesicated.

November 16. Still improving.

December 13. Discharge ceased a fortnight ago. Progressively improving in strength and general aspect. Tympanitic resonance at the summit of the right chest anteriorly continues.

November 12, 1847. Patient has not been seen by me since the foregoing date, viz., Dec. 13, 1845, until the present time. She went to school during all last winter, and kept about during the past summer. Last spring pus began to discharge at a point anterior to the old orifice, and also at the latter point. The discharge continued through the summer until two or three weeks ago. Quantity discharged during the twenty-four hours, varied from a tablespoonful to half a pint. She has not been so well since the discharge ceased. She is still able to walk about, but is feeble and emaciated. Easily put out of breath on exertion. Anorexia. Troubled with diarrhœa. Slight cough. Pulse very frequent.

On the right side there is uniform flatness on percussion. No respiratory sound anteriorly or laterally; a faint tubular sound posteriorly at summit. On the left side flatness anteriorly except over an area from two to three inches in diameter at the upper part of the chest toward acromial extremity of the clavicle. Respiratory murmur appreciable in this situation, and over no other part of the chest anteriorly. Percussion yields clear resonance over the left side laterally and posteriorly, and in these situations there is a loud puerile vesicular murmur. Sounds of heart loud. No point of impulse perceptible. Soft bellows murmur with first sound. In respiration the right side is almost

quiescent, and on a front view the left shoulder is the only part in active motion.

The coexistence of pericarditis was suspected from the above signs and symptoms.

The patient was not seen afterward, nor the issue ascertained.

It is evident that the causes determining the formation of pus, so far as these few observations go, in pleurisy, are incident to the inflammation; that is to say, when the pleural cavity contains pus, instead of the turbid serum which is usually found, it is not owing to a longer duration of the disease, to a larger amount of effusion, or other circumstances by which it might be supposed ordinary pleurisy is so modified as to run into empyema. Empyema, in other words, would seem to be a form of the disease differing from ordinary pleurisy, *ab initio*, in the tendency to the formation of pus. In each of the three cases just given, pus was formed after the disease had existed but a short time; and, in several of the fatal cases in this collection, in which the disease ended fatally after a much longer duration, and in which the quantity of liquid effusion was equally great, the contents of the chest were found to consist only of serum and fibrin. A larger collection of observations might show that ordinary pleurisy is apt to be converted into empyema; but, in view of the facts contained in this collection of cases, the latter form of the affection involves an intrinsic difference so far as relates to the distinctive feature viz., the formation of pus.\*

#### MORBID APPEARANCES AFTER DEATH.

The histories in the collection of cases under analysis, embrace eleven autopsies. Aside from those of which an account has been already introduced into the Report, the morbid appearances were such as belong to ordinary Chronic Pleurisy with a greater or less amount of effusion of fibrin and serum, a corresponding compression of the lung, etc. The facts falling under this head are not considered to possess sufficient novelty to warrant a detailed

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\* This accords with the view presented by Mr. Paget, in his admirable lectures on inflammation, delivered before the Royal College of Surgeons, of England, (which have fallen under perusal since this Report was written,) of the distinction between "adhesive inflammation," and "suppurative inflammation." Mr. Paget's explanation of the distinction is, that in the former, i. e. in adhesive inflammation, there is a preponderance of the fibrinous element in the effused inflammatory products; while in the latter, i. e. in suppurative inflammation, the exudation-corpuscles are in excess.

description in the cases individually, which would require considerable space. They are accordingly dismissed with this brief reference.

#### TREATMENT.

The few remarks which I shall offer under this head, will be confined to the treatment of simple Chronic Pleurisy, i. e. general pleurisy, not involving perforation, or complicated with other affections. In many respects, however, the same principles of treatment are equally applicable under the latter circumstances. The number of cases in this collection in which the management was observed throughout, is too few, and the plan of treatment too little varied, to institute comparisons in order to determine the influence of different therapeutic measures by numerical results. Nevertheless, on an examination of the treatment pursued, (of which an abstract, as contained in the history of each case, is before me) I may be able to draw some practical conclusions. In doing this I shall avoid, as much as possible, details which the reader would find tedious.

*Bleeding.* General bleeding was practiced in six cases. In all but two of these cases, this remedy was employed before the patients came under my observation. The immediate effects, therefore, were not subjects of study for me, except in these two instances. In one of these the symptoms seemed to be relieved by bleeding; in the other, no alleviation ensued. In the former instance, the case ended in a slow recovery. The latter terminated fatally in seven weeks. In both cases bleeding was practiced twice, shortly after the date of the attack. Of the four remaining cases, recovery followed in two; in one, the patient was able to return to active duties in a month, the chest being, however, still moderately full of liquid effusion; in the other, the recovery was tedious. In the first of these two cases the patient was twice bled. In one of the remaining cases death occurred after five months. This patient was twice bled. The other case was that of the girl who had empyema, which discharged externally. The case, without doubt, ended fatally soon after she was last seen by me, which was more than two years after the date of the attack.

In all the cases in which bleeding was employed, the symptoms denoted acuteness of inflammation, or an approach thereto. The propriety of this measure relates to cases of that description. Few practitioners, if any, at the present time, it is presumed, resort to bleeding in cases in which the disease is subacute at the commencement, excepting, perhaps, some instances in which manifest plethora exists. So far as any inferences are allowable from

so few data, the facts which have been cited do not exemplify, in a striking degree, the efficacy of bleeding even in the cases in which the symptoms denote, at the commencement, acuteness of inflammation. The observations, however, are not sufficient in number to authorize any very decided conclusions respecting the value of this remedial measure in this disease.

Local bleeding, by leeching, was employed in two cases, and wet cupping in one. In each of these cases general bleeding was also practiced. Of the two patients leeches, one died, and the other recovered. The patient cupped, recovered. These facts are not mentioned because they are supposed to have much, if any value. They are obviously inadequate for any practical inferences.

*Mercurials and Diuretics.* I include these remedies in the same category because they were almost uniformly given in conjunction. Simple mercurialization, without diuretics, or other remedies, was not tried in any instance. In general, the plan of medication pursued was that advised by Dr. Hope, consisting of mercury, with diuretics, or cathartics, followed by, or associated with tonics, nutritious diet and vesication over the chest. With respect to the special agency of mercury, therefore, my observations do not furnish any definite results. The same remark will apply, measurably, to other remedies; but not to the same extent, because diuretics, and in some instances cathartics, etc., were continued after mercurials had been suspended. The object kept in view in directing these measures was chiefly the absorption of the liquid effusion. In several instances the effect of mercury and diuretics in this respect was marked. If the quantity of urine was increased in any considerable degree, the accumulation within the chest was sensibly diminished. This diminution, however, proceeded only to a certain extent. The liquid contents were in no instance speedily and entirely absorbed; but sufficient effect was produced to cause decided relief to the symptoms due to distension, and also to lead to an obvious contraction of the dimensions of the chest. Mercury was never carried beyond slight ptyalism, and not uniformly to that point. The diuretics used were squill, digitalis, the supertartrate, and the nitrate of potash. These were generally given more or less conjointly, or rather simultaneously. A dry diet was usually enjoined, especially while diuretic remedies were prescribed.

*Cathartics.* In some cases it was observed that the kidneys were not readily acted on to produce increased secretion; and, occasionally, watery evacuations from the bowels took place under the use of diuretic remedies. Under these circumstances, hydragogue cathartics were employed. The liquid effusion was sometimes apparently diminished by their operation. Gamboge,



elaterium, the sulphate of magnesia, and, in one case, podophyllum were prescribed for this object.

*Iodine.* This remedy was given in a few cases, but without marked effect in promoting absorption of the liquid effusion.

*External applications.* These consisted of vesication, stimulating liniments, and the iodine ointment. Vesication was uniformly employed, to a greater or less extent, after the mode advised by Dr. Hope, viz., small blisters, removed early, and carried successively over different parts of the affected side. The impression derived from the constant use of this remedy was not unfavorable to their efficiency in favoring the process of absorption. It is true that the blisters were usually conjoined with other therapeutic measures, but in some instances they were continued with advantage after other remedies had been suspended. Stimulating liniments were employed simply to relieve pain. The iodine ointment was resorted to in a few instances without any special effect being observed.

*Tonics, stimulants, diet, and regimen.* After the use of the measures already referred to had been continued for some time, and sometimes before they were discontinued, tonic remedies, and diffusible stimulants generally constituted the medicinal treatment. They seemed to exert a good effect, and in some instances this was striking. Conjoined with their use, a generous diet, and moderate exercise in the open air were found highly useful. In several cases it appears from the histories that the patients after a certain measure of improvement, remained in a stationary condition until they began to go out of doors. In one case the patient had for several weeks been confined to the bed, and ulceration of the nates occurred in consequence. Under these circumstances, he was carried out, placed in an easy carriage, and rode a short distance. He returned much improved. The plan was systematically continued, with constant improvement, and from that date he steadily and rapidly advanced in his recovery. In a less striking degree the salutary influence of the same regimen was equally obvious in several instances.

In thus endeavoring briefly to state the results of my experience in the management of Chronic Pleurisy, the want of precision is not less obvious to the writer, than to the reader. Exactness in determining the relative agency of different measures of treatment is, however, seldom attainable; and especially when the treatment consists of several measures employed in conjunction, or succession, the difficulty of ascertaining experimentally the influence which belongs to them separately is very great. Moreover, with respect to the disease under consideration, as also many other diseases, science has not yet acquired the true standard by which to measure the efficiency of remedies



individually or collectively. This standard is the natural history of disease uninfluenced by medicinal management. A series of cases in which Chronic Pleurisy was allowed to run its course, under favorable hygienic conditions, without remedies, would furnish results of very great value as a point of departure for determining how far therapeutic agencies are really efficacious. The difficulties in the way of obtaining such a collection of facts, it is obvious, are of a nature to render it doubtful if they will ever become the property of science. As an approximation to an end so desirable, the amount of fatality under different modes of treatment is to be considered. The proportion of deaths, in the present collection, among the cases of simple uncomplicated pleurisy has been seen to be quite small. In the collection of seventy-eight cases analyzed by Dr. Blakiston, to which reference has before been made, recovery took place in every instance. Dr. B. quotes a statement by Louis, made to the Academy of Medicine at Paris, "that he had never met with a case that had terminated fatally when the disease was in its simple form." That the vast majority of cases end in recovery, certainly accords with the general experience of medical practitioners. It is, therefore, fair to presume that the natural tendency of the disease is toward a favorable termination. This consideration is to be taken into account in estimating the importance of remedies severally, or combined. When the disease proves fatal, it is by being complicated with other affections, which are but little under the control of art.

To sum up, in a few words, the practical views of the management of Chronic Pleurisy based on the personal experience of the writer, the first and chief object in the early part of the disease, is to effect absorption of the liquid effusion. It is an object, doubtless, to prevent or limit the effusion, if cases come under observation, and the diagnosis is made before this takes place to much extent. But in a large proportion of instances the effusion takes place so rapidly, and is accompanied by so little pain or other symptoms of prominence, that at the first examination the chest is found to be already filled. Mercury and diuretics exert a certain amount of efficiency in causing absorption to commence, and continue. If the kidneys are not readily acted on, hydragogue cathartics may exert a similar influence. Small blisters applied in succession, in a manner least liable to occasion constitutional irritation, are valuable means for the same end. The effect of iodine applied locally, and administered internally, is less appreciable, but perhaps not altogether negative.

The beneficial results of these therapeutic measures have certain limits, both as respects the extent to which they promote absorption, and the dura-

tion of their employment. The complete removal of the liquid effusion by absorption, requires usually a long period, usually several months at least. The remedies mentioned should not be persisted in after they cease to exert an obvious effect. Fortunately the resources of physical exploration, in this disease, enable us to determine accurately, from day to day, the condition of the chest. If the accumulation within the cavity of the pleura does not sensibly diminish, but remains stationary for days or weeks, it is useless to continue measures which may do positive harm by compromising the powers of the constitution. Considering the natural tendency of the disease toward final recovery, or at all events the absence of a tendency to a fatal termination, we should not be justified in subjecting the system to the long continued operation of medicinal agencies which must of necessity prove hurtful, if they fail to accomplish the desired end.

After giving the measures just referred to a fair trial, reliance must be had on tonic remedies, diffusible stimulants, associated with a generous diet, and an invigorating regimen. To preserve the powers of the constitution in an affection requiring so long a period for the completion of recovery, is a prominent end to be kept in view in the management. My observations have furnished repeated illustrations of immediate and progressive improvement directly all debilitating medicines were suspended, and a sustaining plan adopted. So far as my experience goes, the effect of this change in the treatment has been more striking than the apparent efficiency of any medicinal remedies. The duty of guarding and developing the vital forces, in my estimation, ranks first in importance. It is almost needless to add, that due protection against exposure, over-exertion, etc., is by no means to be overlooked. Exercise in the open air should be restrained within proper limits, the surface of the body is to be kept at an uniform temperature by appropriate clothing, and dietetics duly regulated. The patient should not go out when the weather is inclement. Flannel, or raw silk, should be worn next the skin, and in winter vestments of buckskin or chamois leather may be superadded. The food should be substantial and plain, with a fair proportion of flesh, and a sparing supply of liquids. Excesses and irregularities of all kinds are of course to be interdicted.

In conclusion, a few remarks on the subject of *paracentesis thoracis* may not be out of place in this Report, although my observations contain no facts relative to this operation. This subject has of late given rise to considerable discussion, and in this country the attention of the profession has been directed to the importance of the operation by Dr. H. I. Bowditch,\* of Boston,

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Mass., who has reported several cases in which it was practiced. One object in Dr. Bowditch's communications has been to bring to the notice of practitioners a new method of performing the operation, devised by Dr. Morrill Wyman, of Cambridge, Mass. This method consists in using an exploring canula and trochar, which is attached by a flexible tube to a suction pump so constructed that the fluid may be removed from the chest through the canula, and discharged from the pump through another aperture.

Dr. Bowditch gives a report of eight cases in which this method was resorted to. Three of the cases ended in recovery, and the operation is considered by Dr. B. to have had an important influence in the favorable result. In three cases material improvement followed the operation as respects the rational and physical signs. In no instance were there any unpleasant consequences aside from the slight inconvenience from the punctures. The operation is shown to be made with ease, and apparently with entire impunity.

As regards the results, Dr. Bowditch was unfortunate in the selection of cases in which trial was made of this plan of treatment, inasmuch as the proportion of recoveries (3-8) is much less than would be expected to occur in cases coming indiscriminately under observation, and managed without resorting to paracentesis. It is probable that Dr. B. did not feel justified in making trial of the operation except in cases in which the symptoms were unusually severe. This is the impression received on reading the details of the histories; and it does not appear, as stated by Dr. B., that in any case the symptoms or progress of the disease were unfavorably affected by giving exit to a portion of the liquid contents of the chest. Moreover, several of the cases reported by Dr. B. were cases of empyema, and it is well known that, the absorption of pus being effected with much greater difficulty than when the liquid effusion consists of fibrin and serum, this variety of Chronic Pleurisy is much more likely to prove fatal than the simple form.

Rationally considered, the operation, performed after the mode suggested by Dr. Wyman, is an important improvement in the management of Chronic Pleurisy, and appears to be free from any serious objections. The end of medication is to effect removal of the liquid effusion, by means of absorption. If this end can be attained by a simple, trivial operation, devoid of all danger, it would certainly seem that an advantage has been gained, inasmuch as the agency of remedies for the same end is uncertain, slow, often ineffectual, and exposes the patient to injury. If it be found by experience to be hurtful to remove the contents of the chest at once, or in a short space of time, and

that, therefore, the gradual operation of the process of absorption is preferable, this difficulty may be easily avoided by repeating the operation at such intervals as observations show to be most judicious, and removing a small quantity at a time. The operation is so slight, and attended with so little inconvenience, that there is no objection to this course. In cases in which the accumulation is large, producing great distress, and perhaps threatening life, and especially when other remedies fail to procure relief, there can be no question as to the propriety and importance of paracentesis, even performed after the old method. In cases of empyema, also, it cannot be doubted that it is desirable to withdraw the purulent liquid artificially, and not trust to absorption. The difficulty here consists in determining the fact of the chest containing pus. As already remarked under another head, where this form of pleurisy is suspected, there seems no objection to the use of the exploring canula as an instrument of diagnosis.

Heretofore, the question of the propriety of resorting to paracentesis involved the liability of mistaking for pleurisy with effusion, other affections of the chest. The operation has frequently been made when the chest contained no liquid. At the present time, however, uncertainty in diagnosis is not a valid reason for omitting or delaying to puncture the chest. Physical exploration supplies demonstrative evidence of the presence of liquid in the cavity of the pleura. It remains by accumulated observations to determine whether in simple Chronic Pleurisy with effusion, the operation of paracentesis may be resorted to without diminishing the chances of recovery, and with the effect of relieving unpleasant symptoms, and expediting recovery.









